RECENT BREEDING RECORDS OF STORKS IN EASTERN AFRICA

By

M. P. KAHL

CONTENTS

INTRODUCTION

Between November 1963 and July 1967 I have been engaged in research on the comparative behaviour and ecology of storks (family Ciconiidae) in Kenya, Uganda, Tanzania, and Ethiopia. A number of previously unreported breeding localities were discovered during this study—some being found by me personally and others being reported to me by various correspondents. This paper is an attempt to compile the recent records, in the hope of giving a better understanding of the breeding distribution and breeding seasons of this family of birds. Storks frequently use the same nesting site for many years, if undisturbed and given the proper climatic conditions, and so perhaps these records will prove useful to future workers studying these birds. I have also included a few comments on the ecological factors involved in the timing of the breeding seasons, as a possible basis for further research along these lines.

RECENT BREEDING RECORDS OF STORKS IN EASTERN AFRICA

Species	*Location*	*Long.*	*Lat.*	*No. Nests*	*Date of First Eggs*	*Authority*
Yellow-billed Stork	**KENYA,**					
(*Ibis ibis*)	Kisumu (10km SE)	34°47'E	0°10'S	100+	mid-Mar 63	(1)
				50–65	early-Mar 64	(2)
				25	mid-Mar 65	(2)
				50–60	early-Apr 66	(2)
				50	late-Mar 67	(2)
	TANZANIA,					
	Chagana, River Wembere	33°55'E	4°30'S	2000+	Jan-Feb 62	(1)
	Lake Manyara Nat. Park	35°50'E	3°25'S	150	May 62	(3)

Open-billed Stork (*Anastomus lamelligerus*)	**KENYA,**					
	Kisumu (10km SE)	34°47'E	0°10'S	20+	late-Mar 63	(1)
				70	early-Mar 64	(2)
	Garsen (8km S)	40°10'E	2°20'S	100+	June 56	(4)
	TANZANIA,					
	Chagana, River Wembere	33°55'E	4°30'S	5000+	Jan-Feb 62	(1)
	UGANDA,					
	Ishasha, Q.E. Nat. Park	29°40'E	0°35'S	8	mid-Dec 63	(2)
Abdim's Stork (*Sphenorhynchus abdimii*)	**KENYA,**					
	Busia, Sio River	34°08'E	0°20'N	1	mid-Jan 64	(2)
				1	late-Jan 65	(2)
				3	late-Jan 66	(5)
	Kisumu (town centre)	34°45'E	0°07'S	1	Feb or Mar 66	(6)
	Lokitaung (20km NW)	35°30'E	4°30'N	12	early-Jun 61	(7)
	ETHIOPIA,					
	Lake Shala	38°30'E	7°30'N	25–30	early-Apr 66	(8)
				45	early-Apr 67	(2)
	Gambella, Baro River	34°00'E	8°10'N	?	late-Mar 66	(9)
				?	Apr 67	(10)
Woolly-necked Stork (*Dissoura episcopus*)	**UGANDA,**					
	Murchison Falls Nat. Pk.	31°35'E	2°15'N	1	Nov-Dec 62	(11)
	Hoima (20km W)	31°10'E	1°30'N	1	Feb or Mar 64	(12)
				1	early Feb 65	(2)
Saddle-billed Stork (*Ephippiorhynchus senegalensis*)	**KENYA,**					
	Rumuruti (8km NE)	36°35'E	0°20'N	1	about Dec 62	(1)
	Kisumu (5km E)	34°47'E	0°07'S	1	mid-Mar 66	(2)
				1	early-Apr 67	(2)
	UGANDA,					
	Kazinga Channel, Q.E.Nat. Park	30°00'E	0°10'S	1	mid-May —	(13)
	Mweya, Q.E. Nat. Park	29°55'E	0°10'S	1	about Jun 65	(14)
	TANZANIA,					
	Seronera River, Serengeti	34°50'E	2°25'S	1	late-Feb 62	(13)
Marabou Stork (*Leptoptilos crumeniferus*)	**KENYA,**					
	Kitale (1km W)	35°00'E	1°02'N	?	Oct 62	(1)
				8	early-Oct 63	(1)
				15	late-Sep 64	(2)
				18	early-Oct 65	(2)
				18	mid-Sep 66	(2)
	Makindu (7km SW)	37°45'E	2°20'S	15	early-Jul 65	(2)

TANZANIA,					
Lake Manyara Nat. Park	35°50'E	3°25'S	8	Sep 58	(3)
			?	Jul-Aug 59	(3)
UGANDA,					
Hoima (20km S)	31°15'E	1°20'N	35	Nov-Dec 63	(2)
			80	mid-Nov 66	(2)
Chobe, Murchison Falls Nat. Park	32°10'E	2°15'N	5	late-Nov 66	(2)

AUTHORITY:

(1) M. E. W. North, *in litt.* (27 Nov 63)

(2) personal observations, M. P. Kahl

(3) A. M. Morgan-Davies, *in litt.* (10 Aug 65)

(4) North, 1959

(5) Z. Mwanga, *in litt.* (25 Jan 66)

(6) J. Blencowe, pers. comm.

(7) Blencowe, 1962

(8) E. K. Urban, *in litt.* (8 Jun 66)

(9) J. Blower, *in litt.* (22 Jul 66)

(10) E. K. Urban, *in litt.* (31 May 67)

(11) P. Allen, pers. comm.

(12) N. L. Howarth, *in litt.* (25 Jun 64)

(13) Pitman, 1965

(14) I. Ross, pers. comm.

RESUME OF BREEDING DISTRIBUTION AND SEASONS

YELLOW-BILLED STORK, *Ibis ibis* (Linné)

A wide-spread and commonly occurring species, which probably breeds in many more localities than those listed in the table.

At Kisumu, the only habitat where I have studied the ecology of this species in detail, reproductive activity appears to be triggered by heavy rainfall and the resultant flooding of the shallow marshes bordering Lake Victoria. This, in turn, seems correlated with food availability. The Yellow-billed Stork is primarily a fish-eater. During the dry season most fish are forced to leave the shallow marshes, which either dry up completely or become too de-oxygenated to support fish, and retreat to the deeper waters of Lake Victoria where they are unavailable to the birds. With the onset of the rains fish move up streams and spread out over the marshes of the Kano Plains to spawn. By nesting at this time the storks are assured a plentiful supply of fish for their young, provided the rains do not end prematurely.

The closely related Wood Stork (*Mycteria americana* Linné) in Florida, U.S.A., also breeds when fish are seasonally abundant. However, owing to different ecological circumstances, this happens to occur there during the dry season (*cf.* Kahl, 1964).

OPEN-BILLED STORK, *Anastomus lamelligerus* Temminck

Another widely occurring species, likely to be found breeding in low-lying areas where their major food, the *Pila* snail, is plentiful. All the available records from

eastern Africa seem to be from south of the equator, but certain areas in Uganda (such as the Lake Kyoga region) seem likely prospects for northern hemisphere breeding.

In most areas breeding seems clearly related to flooding and seasonal abundance of snails for food. *Pila* snails are known to burrow into the mud and aestivate during drought, emerging once again after the area has been re-flooded.

ABDIM'S STORK, *Sphenorhynchus abdimii* (Lichtenstein)

This small, insect-eating stork is found, often in great numbers, as a passage migrant over much of eastern Africa. Its main breeding grounds lie in the broad belt of semi-arid scrub savanna between 6° and 15° North, extending from Ethiopia and the Sudan across the continent to northern Nigeria and Senegal. In these regions Abdim's Storks nest commonly, sometimes abundantly, in trees, on rocks, and even on the roof-tops of village huts.

In East Africa proper they seem restricted, as breeding birds, to a small area of western Kenya in the vicinity of Kisumu-Busia-Kakamega. North (1940) has also reported their breeding in this region. (The breeding colony reported near Lokitaung, in extreme northern Kenya, is probably best considered a marginal representative of the main breeding population in the Sudan).

Throughout its major breeding range in the north, the Abdim's Stork nests during the long summer rains. It is everywhere known by the local people as a "harbinger of the rains", arriving about April or May as the rains begin and leaving once more for the south before the arrival of the dry weather. Their rainy-season breeding is probably related to the "flush" of insect food available for the young at that season.

In western Kenya breeding normally starts in January or February, between the short and long rains. This timing results in the young passing the period of greatest food demands and fledging during the long rains.

WOOLLY-NECKED STORK, *Dissoura episcopus* (Boddaert)

Rather rare everywhere but most often encountered in eastern Kenya and along the coast, or in the western Rift Valley in Uganda. Nesting is known only from western Uganda, but it may breed near Kilifi, Kenya (where the birds are often seen foraging on exposed reefs at low tide) or in the Tana River region.

Little is known of the type of food given to the young. Probably it is similar to that eaten by the adults—i.e. frogs, fish, snakes—and would probably be easier to find during or just after the rains. Woolly-necked Storks in India generally nest just before and during the monsoon.

SADDLE-BILLED STORK, *Ephippiorhynchus senegalensis* (Shaw)

This spectacular species is found throughout the region in the vicinity of large

marshes or lakes. It is a solitary nester, generally building its nest atop a large tree often some distance from water and usually remote from human habitation.

The birds are usually shy at the nest and will often desert if subjected to much disturbance by man. Thus, it was surprising to discover an active nest within 50 feet of the main Kisumu-Kericho highway, directly over a cluster of African huts and within easy sight and sound of passing traffic and pedestrians. These birds were amazingly tame and afforded ideal subjects for study during the 1966 and 1967 seasons.

In East Africa Saddle-bills breed mostly during the rains. At the Kisumu site the young were fed on large fish, procured in the marshes adjacent to Lake Victoria. As discussed under the Yellow-billed Stork, fish were abundantly available there only during the rainy season.

In other areas out of the equatorial belt (e.g. Zambia, Rhodesia, and the Sudan) most breeding occurs at the end of the single, long rainy season (Pitman, 1965). This could be related to the concentrating of fish in drying marshes as the water recedes, but firm ecological evidence on this hypothesis is still lacking.

MARABOU STORK, *Leptoptilos crumeniferus* (Lesson)

A discussion of the Marabou's breeding is presented in detail elsewhere (Kahl, 1966), so only a brief outline will be given here. Most nesting colonies are located near a dual source of food: (1) a supply of carrion to form the bulk of the diet, and (2) a source of fish, frogs, or other small vertebrates to fulfil the calcium requirements of the growing young. Although the Marabou is abundant in many places relatively few breeding sites are known, and these usually comprise only a few nests. Thus, it seems that the Marabou must breed only infrequently, on the average, and live a very long time.

Most breeding is confined to the dry season, for a number of possible reasons: (1) carrion is more readily available during drought when animals are concentrated in a few areas of remaining surface water, (2) aquatic vertebrates become concentrated and easier to catch in many habitats when water is receding, (3) some prey is caught at grass fires, which are common only during dry weather.

ACKNOWLEDGEMENTS

During 1964–65 these studies were supported by a post-doctoral fellowship from the U.S. National Science Foundation. During 1966–67 support was received from a research grant from the National Geographic Society, Washington, D.C. Additional financial aid came from the Chapman Fund of the American Museum of Natural History. I am grateful to Makerere College, where I was given working facilities during part of my study period, and to the following persons who assisted greatly by

supplying information: P. Allen, J. Blencowe, J. Blower, L. H. Brown, N. L. Howarth, A. M. Morgan-Davies, Z. Mwanga, M. E. W. North, C. R. S. Pitman, I. Ross, M. Turner, and E. K. Urban.

SUMMARY

A table of nesting records, most of them previously unpublished, is presented, showing breeding location, number of nests, and approximate date of egg-laying for the six species of storks (Ciconiidae) that nest in Kenya, Uganda, Tanzania, and Ethiopia.

A brief analysis of ecological factors related to the timing of the breeding season shows that most storks in this region adapt their date of egg-laying so that the young are being fed during the season of most plentiful food supply. In the breeding localities considered here the Yellow-billed, Open-billed, Abdmin's, and probably the Woolly-necked Storks rear their young during the rainy season. The Marabou Stork nests primarily during the dry season. The Saddle-billed Stork appears to nest during the rains in the equatorial belt of East Africa but at the end of the rains or during the dry season in Zambia, Rhodesia, and the Sudan.

It is hoped that this brief survey of stork breeding will stimulate further contributions to our knowledge of the breeding distribution of these birds and the ecological factors concerned in the regulation of their breeding seasons.

REFERENCES

BLENCOWE, E. J. 1962. Abdim's Storks breeding on cliffs. *J. E. Afr. Nat. Hist. Soc.* **24**: 64.

KAHL, M. P. 1964. Food ecology of the Wood Stork (*Mycteria americana*) in Florida. *Ecol. Monogr.* **34**: 97–117.

KAHL, M. P. 1966. A contribution to the ecology and reproductive biology of the Marabou Stork (*Leptoptilos crumeniferus*) in East Africa. *J. of zool.* **148**: 289–311.

NORTH, M. E. W. 1940. Field notes on Abdim's Stork in two Kenya provinces. *J. E. Afr. & Uganda Nat. Hist. Soc.* **15**: 1–5.

NORTH, M. E. W. 1959. The great heronry of Garsen on the Tana River. *J. E. Afr. Nat. Hist. Soc.* **23**: 159–160.

PITMAN, C. R. S. 1965. The nesting, eggs and young of the Saddle-bill Stork, *Ephippiorhynchus senegalensis* (Shaw). *Bull. Brit. orn. Cl.* **85**: 70–80.

(*Received 11th July 1967*).